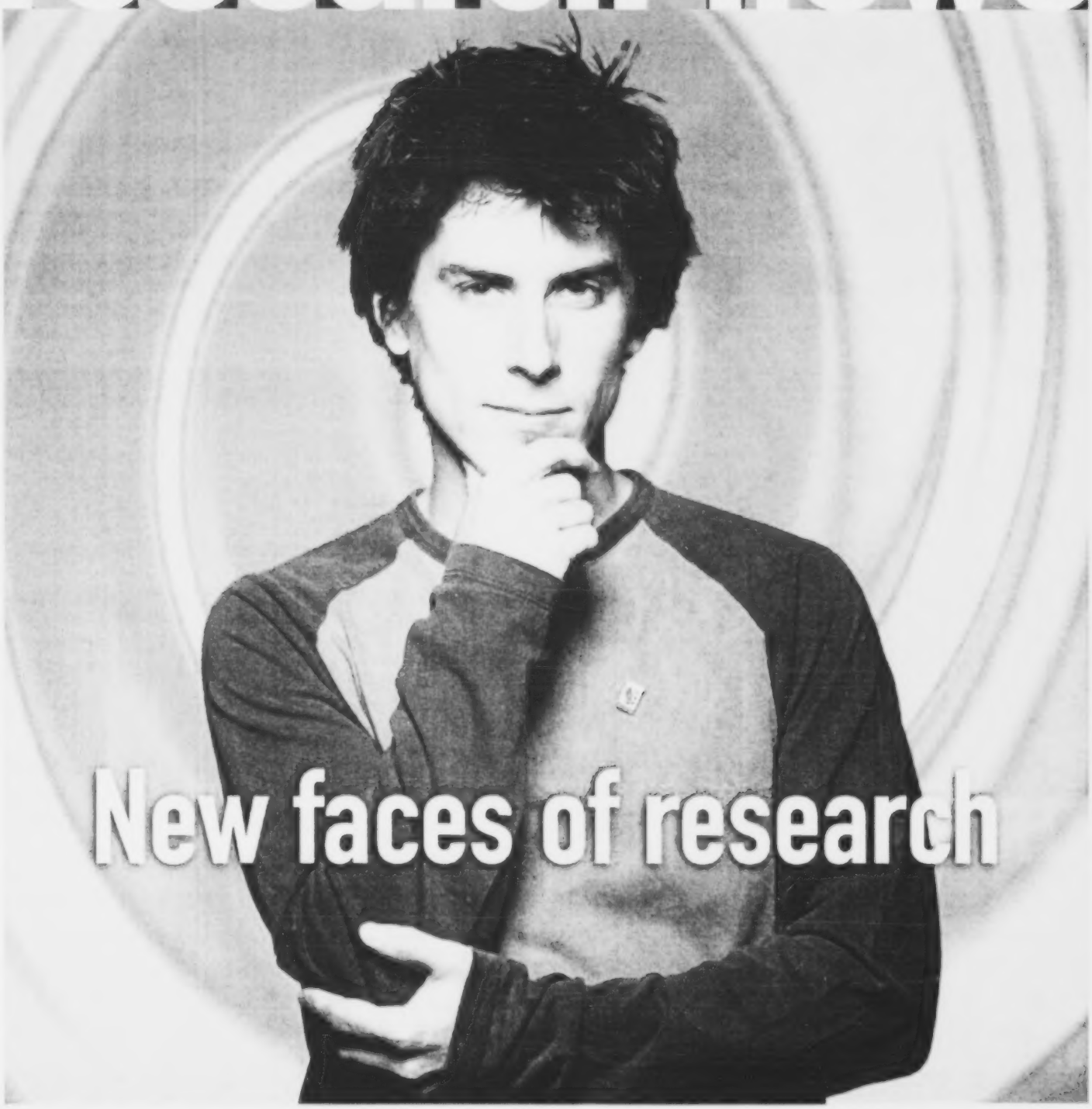
ALBERTA HERITAGE FOUNDATION FOR MEDICAL RESEARCH

ahfmr research news

FALL 2006



New faces of research

On the Cover

Featured on the cover is **Will Shead,** a Ph.D. student in clinical psychology at the University of Calgary who receives support through an AHFMR studentship. The cover photo was shot by Calgary photographer Trudie Lee whose work is regularly featured in *AHFMR Research News*.

AHFMR Mission

AHFMR supports a community of researchers who generate knowledge, the application of which improves the health and quality of life of Albertans and people throughout the world. AHFMR's long-term commitment is to fund health research based on international standards of excellence and carried out by new and established investigators and researchers in training.

Contact Us:

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research news

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Production Notes

Executive editor: Kathleen Thurber
Managing editor: Janet Harvey
Writers: Connie Bryson, Janet Harvey, Tara Hartwell, Barbara Kermode-Scott
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Cover illustration and feature story illustrations: Trudie Lee
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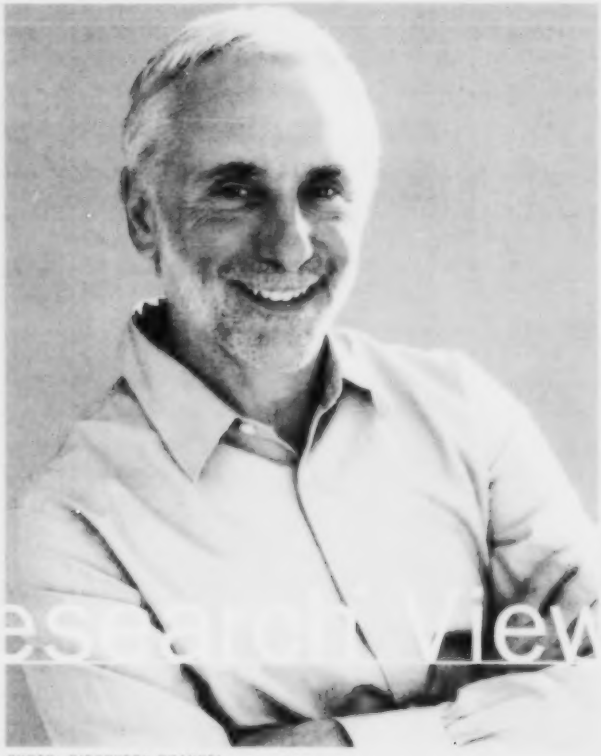


PHOTO: DISCOVERY CHANNEL

If people are considered philistines for not having read at least one of Shakespeare's plays, should they also be considered ignorant and uncultured if they don't know the second law of thermodynamics? The comparison (originally drawn by British novelist C. P. Snow) is one Jay Ingram makes when considering the importance of communicating science. The producer and co-host of The Discovery Channel's popular science show, *Daily Planet*, is not about to write us off if we're not familiar with this particular law of nature (that heat cannot, of itself, pass from a colder to a hotter body), but he is emphatic in his belief that a scientifically informed public is crucial for society.

So just why is it so important? Ingram explains that the world today faces a number of scientific issues with far-reaching consequences—global warming is one, and the appropriate harvesting of stem cells is another. "These issues ultimately reach political levels, so it's important the public be at least as well informed as our politicians," he says. "There is nothing good about a public that is in the dark.

"There is nothing good about a public that is in the dark"

"It's not necessary for people to be 'scientifically literate', although I don't know why you wouldn't want to be," he continues. "Because to not understand what science says—not only about the world and some of the issues that impinge on our daily lives, but about the history of the universe and also the future—is really to miss out on some important, enlightening, and quite sensationally interesting information. Insights into nature make nature a whole lot more interesting."

A scientifically informed public is crucial for society

Ingram came to Alberta recently as chair of the Banff Centre's new Science Communications program, a two-week course co-sponsored by AHFMR. The program was developed for scientists and communicators who want to explore new ways of communicating science. Ingram explains that while there are many effective ways to do this—including magazines, newspapers, radio, and television—there are certain limitations. "Because the general public don't bring an elaborate science context to the picture, you are actually obliged to supply that context before you can tell them anything. If I wanted to explain the newest research on stem cells, I'd have to spend quite a bit of time establishing what stem cells are before I could go on. So communicators are constrained by the scientific vocabulary, constrained by the depth of research, and constrained by this lack of context. The result is that it is very hard to be experimental about how to get these ideas across. That is the main reason we created this program."

An award-winning science communicator in his own right, Ingram can boast an extensive background in this area, including 12 years with The Discovery Channel and 13 years as host of CBC Radio's science program *Quirks and Quarks*. He found his calling after realizing he was not cut out to be a laboratory scientist. "I really loved the information and the theory, but I didn't love working in the lab," he remem-

ABOVE: JAY INGRAM

Page 2 ▸

PHOTO: DISCOVERY CHANNEL

bers. "It took me years to figure that out." At one point, while pursuing a Ph.D. in prenatal biology, he found himself reading more about the research being done down the hall than what was taking place in his own field. "I was more interested in the breadth than the depth of research.

"I really view communicating science as an unfinished business," says Ingram. "I try to keep abreast of new technologies and think about how they can be adapted to communicating science—like using a 3-D virtual-reality system to illustrate and manipulate a DNA molecule. It's an amazing tool. And it sure beats PowerPoint."

The Banff Centre's Science Communications program is a two-week intensive course for professional communicators and scientists sponsored by AHFMR, Alberta Ingenuity, the Canada Foundation for Innovation, and CTV. At the end of the program, participants present group projects created from a number of workshops, debates, visits, talks, and one-on-one dialogues. The goal is for participants to return to their professional practice—in science, media, research, or other fields—ready to provide leadership in the advancement of science communications.

reading the

GENETIC ROAD MAP

Dr. Edan Foley's first encounter with the double helix changed his life. Newly fascinated by the twisted, ladder-shaped DNA molecule that is the genetic road map for all life, he turned his back on his first love, physics, to pursue studies in a new field. "I tossed physics out the window and went into biology," he remembers. "I'd never even taken biology in school."

Dr. Foley is now an AHFMR Scholar and a leader in the study of genetics and immunity. Someday we may all be glad for that about-face on his career path. Because many diseases result from "genes gone wrong", more knowledge of how these genes work could provide information leading to new treatments for a variety of illnesses. "If we can understand how the immune response works, then this is information that other people can work with," he says.

An analogy borrowed from fellow geneticist Cynthia Kenyon helps to explain his work. "The genome is a collection of genes that explains exactly how to build an organism and how to keep that organism working. Consider that genome a blueprint for a car. Now imagine an alien species invades the planet and wants to understand how cars work. The simplest way is to take that blueprint, build 10,000 cars, and take a different part out of every single one. You try to drive the car and see what goes wrong, then that tells you what that part does."

Dr. Foley does the same thing to the genome of the fruit fly, switching off every single gene in turn to see what goes wrong. "What works in simple animals tends to be conserved higher up the evolutionary scale," he says. "So the way a fruit fly will fight off infection is very similar to the first steps that the human body will take to fight off an infection."

Dr. Foley uses a technology called *RNA interference* to turn off these genes. RNA acts as a messenger to the cells, telling them how to build proteins which carry out specific functions. RNA interference involves the creation of double-stranded RNA that looks like DNA in terms of structure. Because many viruses have double-stranded RNA instead of DNA in their genomes, the cell senses that it's being infected by a virus when it's treated with the RNA. It then sets about deactivating this "viral" gene. "The cell turns on this huge processing machine that starts to chew up that specific RNA, turning off the gene." Dr. Foley and the members of his lab are using this technology to create a library that details the various functions of thousands of fruit-fly genes.

Many diseases result from "genes gone wrong"

"We're now looking at how thousands of genes can interact with each other"

Dr. Foley's work illustrates how far the science of genetics has come. "Until recently, this branch of science consisted of a whole bunch of labs working on single genes," he says. "But there's been a huge increase in the complexity of understanding in the past 10 years. We're now looking at how thousands of genes can interact with each other in any given circumstance."

Dr. Edan Foley is an AHFMR Scholar and an assistant professor in the Department of Medical Microbiology and Immunology within the University of Alberta's Faculty of Medicine. Dr. Foley is a Canada Research Chair in Functional Genomics of Innate Immunity, and receives support from the Canadian Institutes of Health Research (CIHR). In 2005 he was awarded the CIHR Institute of Genetics Maud Menten Prize as the top-rated new biomedical investigator in the country.

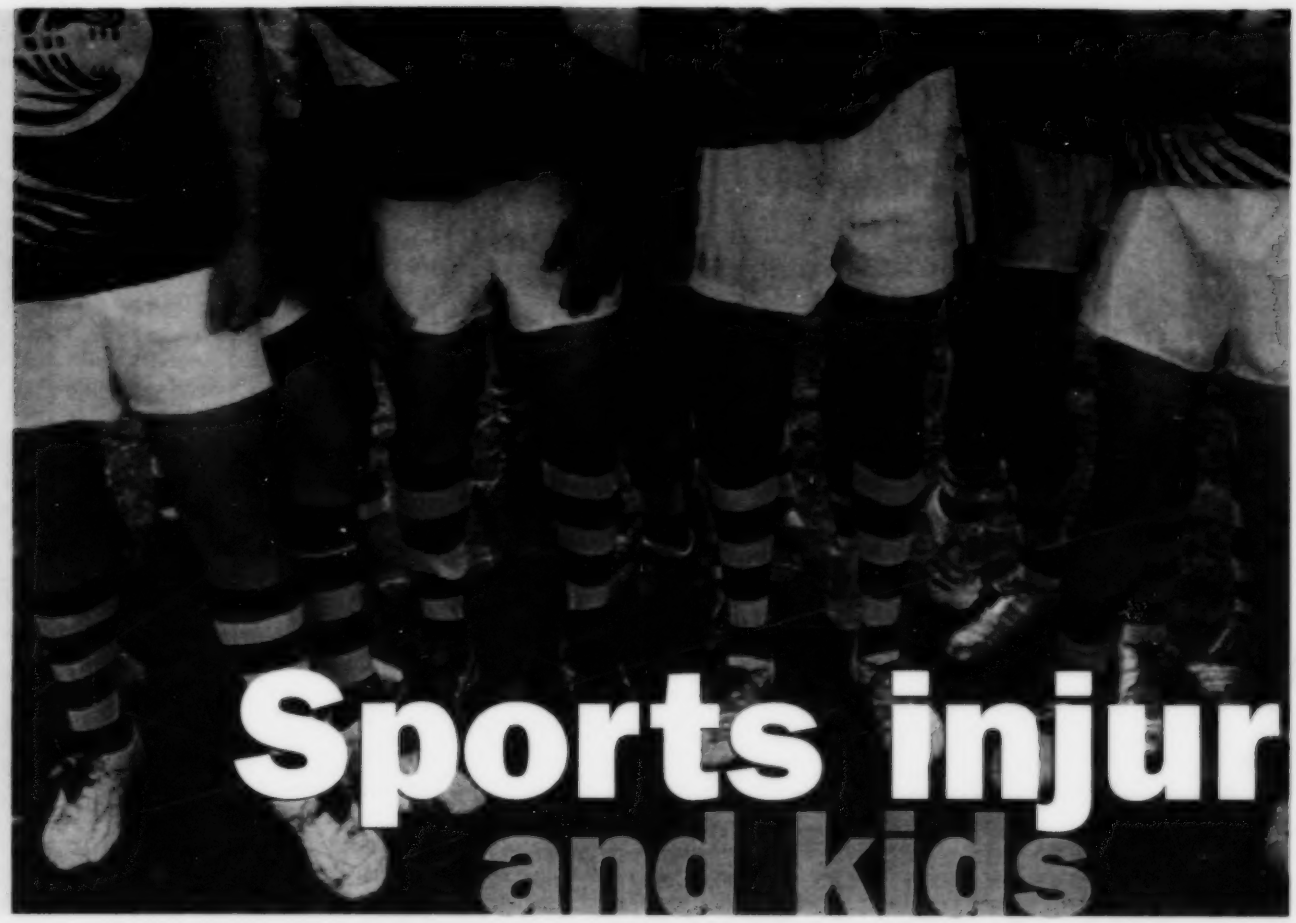
Selected publications

Saleh M-C, van Rij RP, Hekele A, Gillis A, Foley E, O'Farrell PH, Andino R. The endocytic pathway mediates cell entry of dsRNA to induce RNAi silencing. *Nature Cell Biology* 2006 Aug;8(8):793-802.

Stroschein-Stevenson SL, Foley E, O'Farrell PH, Johnson AD. Identification of Drosophila gene products required for phagocytosis of Candida albicans. *PLoS Biology* 2006 Jan;4(1):0087-0099(e4).

Foley E, O'Farrell PH. Functional dissection of an innate immune response by a genome-wide RNAi screen. *PLoS Biology* 2004 Aug;2(8):1091-1106(e203).

RIGHT: DR. EDAN FOLEY



Sports injur and kids

Organized sports are great for kids, no doubt about it. Yet sports are also the leading cause, among adolescents, of injury requiring medical attention. The good news, according to Heritage Population Health Investigator Dr. Carolyn Emery, is that many sports injuries are both predictable and preventable.

Dr. Emery should know. As a coach and an avid participant in hockey, swimming, hiking, and skiing, she has seen plenty of injuries. And as a dedicated researcher and epidemiologist with a special interest in the prevention of sports injuries, she investigates how children and teenagers can be active while remaining injury-free. In her clinical role as a physiotherapist at the University of Calgary's Sport Medicine Centre, she assesses and treats people with sports-related injuries. And as a mother, she does what she can to ensure that her own three children stay safe while having fun playing organized sports.

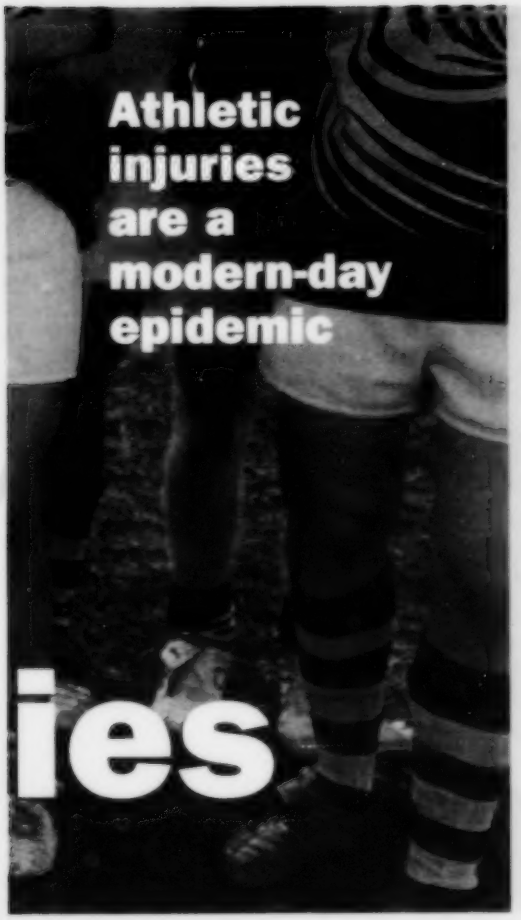
"There's often a long-term impact with sport injuries"

RIGHT: DR. CAROLYN EMERY

Dr. Emery works with mentors Dr. Willem Meeuwisse and Dr. Nick Mohtadi and a multidisciplinary research team at the University of Calgary. Her team collaborates with researchers elsewhere in Canada and internationally to undertake injury surveillance, to identify risk factors, and to develop and evaluate injury-prevention strategies in sports.

Athletic injuries are a modern-day epidemic and have a major impact on population health, points out Dr. Emery. "If kids are injured, it's not just about their being off for a week or two," she says. "There's often a long-term impact with sport injuries." Some injuries can seriously reduce the ability to participate in physical activity, introducing a significant risk factor for such illnesses as cancer and cardiovascular disease. And certain knee and ankle injuries can increase the risk of osteoarthritis in adulthood.

Dr. Emery and her colleagues investigate the internal and external risk factors



"A pre-season training program is critical at all levels of sport"

for sports injuries, so that athletes, therapists, and physicians can predict them and prevent them before they occur.

Sometimes risk factors are sport-specific; for example, in minor hockey leagues that permit body checking, 50% of injuries are related to hitting. Risk factors intrinsic to the individual, such as muscle weakness and poor balance, can be addressed through improvement of muscular control and balance training. Dr. Emery's research team has shown that a home-based balance-training program using a wobble board improves static and dynamic balance and reduces sports-related injuries among healthy adolescents.

"The impact of a pre-season training program is critical at all levels of sport, so that kids aren't entering sports unprepared," recommends Dr. Emery. "For instance, most kids don't play hockey from March to August, and then suddenly they're on the ice for hours every week. Hockey uses muscles in a very different way than other sports do, so players are at potentially increased risk for injury."

Elite athletes typically undergo a pre-season evaluation by a physician and physiotherapist to identify areas that need to be addressed before competition. Dr. Emery suggests that a pre-season evaluation may also help to identify a child or adolescent's individual risk factors. Significant evidence suggests that children and teens who have had previous injuries are at much greater risk for injury or re-injury. Adequate rehabilitation following a significant injury is critical in lowering the risk of re-injury down the road.

What we need is a global approach to injury prevention in sports, suggests Dr. Emery. Changes need to be implemented by clinicians, educators, coaches, parents, and participants—to reduce the number and severity of injuries and allow children and adolescents to be active, healthy, and safe.

Dr. Carolyn Emery is an AHFMR Population Health Investigator. She is an assistant professor in the Faculty of Kinesiology, with a joint appointment in the Department of Community Health Sciences at the University of Calgary. *Dr. Emery also receives support from the Canadian Institutes of Health Research (CIHR).*

Selected publications

Emery CA, Cassidy JD, Klassen TP, Rosychuk RJ, Rowe BH. Effectiveness of a home-based balance-training program in reducing sports-related injuries among healthy adolescents: a cluster randomized controlled trial. *Canadian Medical Association Journal* 2005 Mar 15;172(6):749-754.

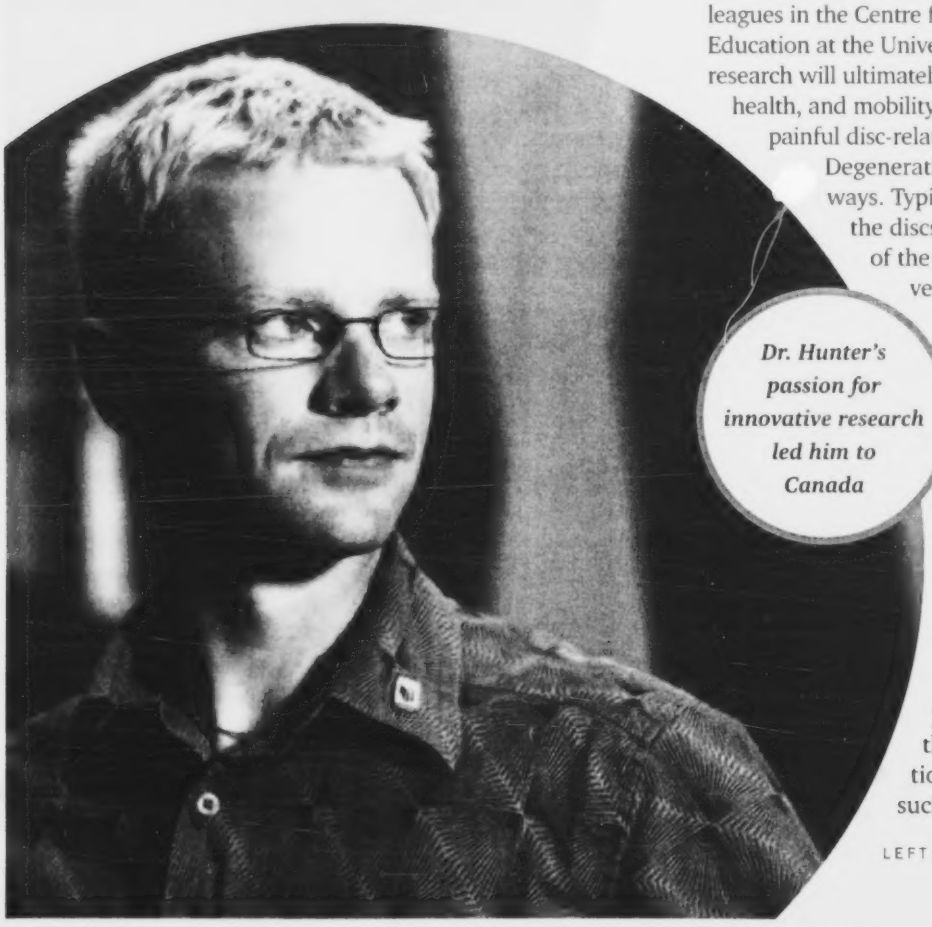
Emery CA, Meeuwisse WH, Hartmann SE. Evaluation of risk factors for injury in adolescent soccer: implementation and validation of an injury surveillance system. *American Journal of Sports Medicine* 2005;33(12): 1882-1891.

Emery CA, Meeuwisse WH, McAllister JR. Survey of sport participation and sport injury in Calgary and area high schools. *Clinical Journal of Sport Medicine* 2006 Jan;16(1):20-26.

A PAIN IN THE BACK

Spinal disc

Heritage Scholar Dr. Christopher Hunter is one of a new breed of medical researchers. He's not a basic scientist or a clinician, but a mechanical engineer. After graduating as an engineer in the United States, he developed an interest in bioengineering, biomechanics, and biomaterials, studying cartilage and arthritis before becoming fascinated with the structure and function of the spine. His passion for innovative research led him to move to Canada.



Dr. Hunter's passion for innovative research led him to Canada

"After gaining my Ph.D., I looked around," he says, "and basically there were only three labs in the world that were doing the kind of research on the spine that I was interested in at that time, one of them being Calgary. I contacted Dr. Neil Duncan, a biomedical engineer in the Department of Civil Engineering here, and ended up coming up as a post-doctoral fellow. Things just kind of snowballed from there. This is a fantastic research centre. It's exciting work."

These days Dr. Hunter searches for new treatment options for individuals with lower-back pain; particularly, pain caused by the breakdown of the discs between the bones in the spine. Disc degeneration is a natural part of the aging process, but in certain people the condition can lead to slipped discs, sciatica, and other problems. Disc-related back pain affects about 50,000 Canadians. Along with his colleagues in the Centre for Bioengineering Research and Education at the University of Calgary, Dr. Hunter hopes his research will ultimately help improve the quality of life, health, and mobility of patients with debilitating and painful disc-related spinal problems.

Degeneration of the spine can occur in various ways. Typically it is caused by a breakdown of the discs between the bony vertebral bodies of the spine, he explains. The spinal vertebrae provide the weight-bearing structural support; the intervertebral discs are the flexible elements in the spine that cushion the bones and provide a certain degree of shock absorption. Each disc is composed of a gelatinous core surrounded by flexible fibrous tissue.

"When these discs function normally, they work fantastically," he says. "In many of us they can work for 80 years without any problems. But in various cases, for reasons which aren't entirely understood, you can get a structural failure in the disc, leading to collapse, herniation, and later, secondary problems such as arthritis."

LEFT: DR. CHRISTOPHER HUNTER

degeneration

What lessons has Dr. Christopher Hunter learned about care of the spine from his research?

"I am much more conscious of my wife's calcium intake, and we are both very careful to get lots of load-bearing exercise," he says. "We do weights, and we run."

But the biggest lesson he has learned is to not allow his children to do weights. The standard recommendation is that until adolescence children should not bear any more weight than their own body weight, reports Dr. Hunter. Using free weights and weight machines is not advised for children because of the high risk of fracturing growth plates. Growth plates are areas of growing tissue near the end of the long bones of children and young people. Fractures of these plates before growing has ceased can cause deformity. By the time young people finish growing, the growth plates have closed and been replaced by solid bone.

Disc-related back pain affects about 50,000 Canadians

When the disc breaks down, other areas of the back, such as ligaments and joints, begin to bear increased amounts of stress and strain to compensate for disc degeneration. Pressure from this added load on the back can lead to injury, causing both acute and chronic pain.

In investigating how and why discs degenerate, Dr. Hunter is focusing on the early development of the spine and discs. "I'm trying to identify what's going on, from both a cell-based and a molecule-based level: why the discs are breaking down in the first place," he explains. "If we can understand that, perhaps we can find clues about how to reverse the process."

He hopes to find effective methods to prevent disc breakdown, as well as new ways to treat it. The best early therapy for back pain is to get up and get moving, he suggests. The next step, usually, is to treat with painkillers and perhaps physiotherapy, massage, or chiropractic. The best option for people with advanced degeneration is surgery. One new surgical option is to insert an artificial (steel and plastic) disc to replace the damaged disc.

The classic surgical option is fusion, using either a bone graft or instrumentation (such as a titanium rod) to fuse the affected vertebrae. Unfortunately the failure rates for this type of surgery are high. For instance, if the patient has osteoporosis, the bones are already compromised and may not repair well. Another problem is that the adjacent discs typically break down several years after surgery.

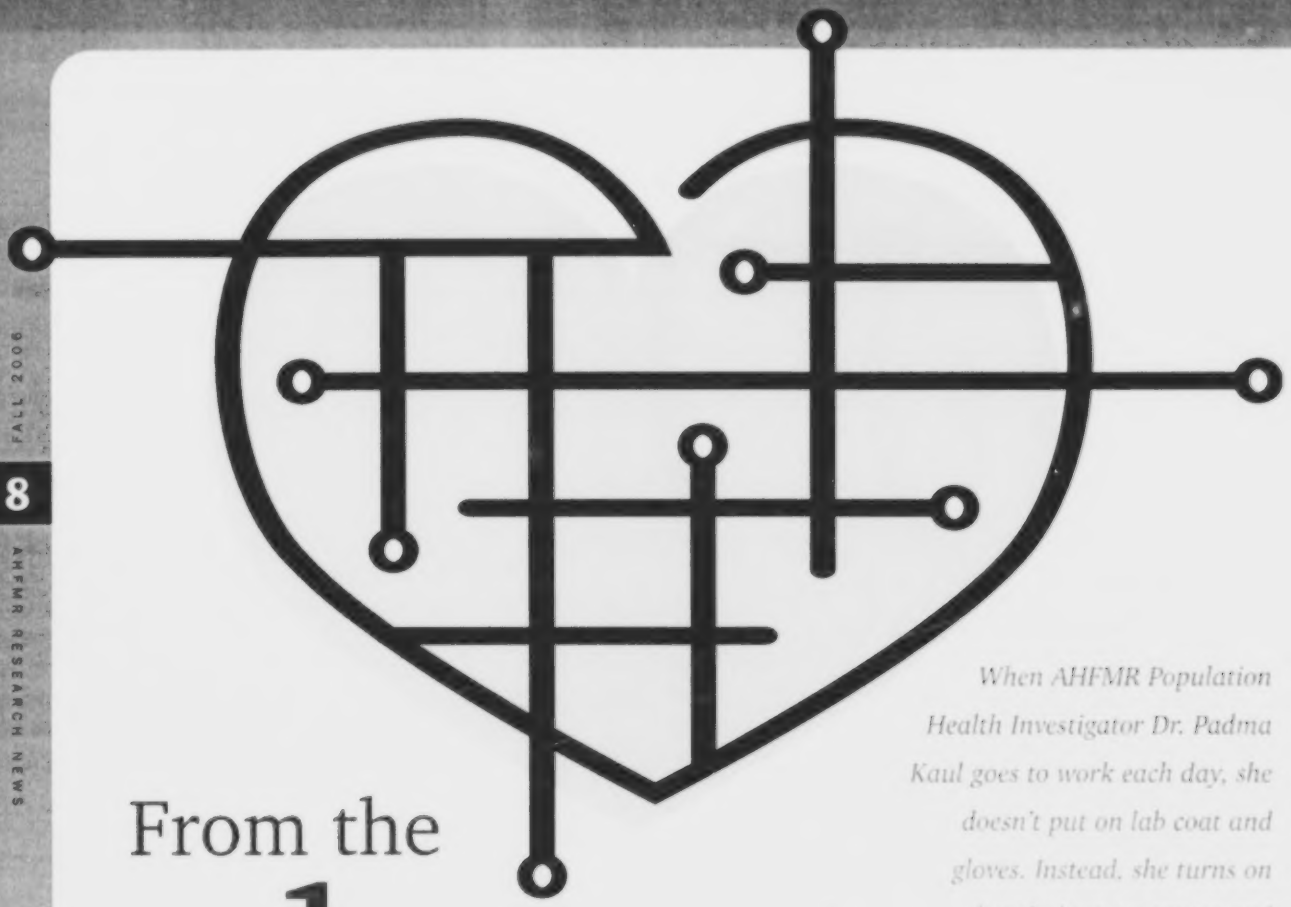
Dr. Hunter is currently working on cell-based therapies to repair, replace, or maintain degenerated discs. These, biological treatments would be used as early interventions to prevent the breakdown of the adjacent discs following fusion surgery.

He also explores how new tissue-engineering technology could help in the development of living implantable discs. Tissue bioengineering is a process in which human tissue is stimulated to grow or grown artificially. Dr. Hunter develops biomaterials for the growth of engineered tissues that would be used to replace tissues which have degenerated so badly that conservative treatments are of no help.

Dr. Christopher Hunter is an assistant professor in the University of Calgary Department of Mechanical and Manufacturing Engineering and at the Centre for Bioengineering Research and Education. He is also an adjunct assistant professor in the Department of Cell Biology and Anatomy and the Department of Civil Engineering. An AHFMR Scholar, Dr. Hunter also receives funding from the Alberta Ingenuity Fund, the Canada Foundation for Innovation, NSERC (the Natural Sciences and Engineering Research Council of Canada), and CIHR (the Canadian Institutes of Health Research).

Selected publication

Hunter CJ, Matyas JR, Duncan NA. The notochordal cell in the nucleus pulposus: a review in the context of tissue engineering. *Tissue Engineering* 2003;9(4):667-677.



From the heart

CARDIAC CARE

When AHFMR Population Health Investigator Dr. Padma Kaul goes to work each day, she doesn't put on lab coat and gloves. Instead, she turns on her desktop computer and examines databases of health statistics from Alberta and worldwide, looking for trends in the treatment of cardiac patients and the outcomes of their treatment.

One specific question drives her research agenda: Is there a link between revascularization rates and mortality rates in cardiac patients? Revascularization procedures (these include coronary angioplasty, as well as open-heart surgery) are used to restore blood supply to a blocked region of the heart.

A recent study by Dr. Kaul comparing patient outcomes in the US and Canada provided good evidence of the value of these types of studies. "If you look at procedure rates in the two countries, they are very different. But how about the outcomes?" she asks. "Do the differences in how patients are treated actually make a difference in whether they survive in the long term?"

Dr. Kaul's study was the first to examine long-term differences in mortality rates between the two countries. The results showed that the more aggressive use of revascularization procedures in the US was associated with a significant decline in the

number of patient deaths 5 years afterwards. Mortality rates were 21.4% in Canadian patients and 19.6% in American patients. Dr. Kaul cautions, however, that these numbers come from a select group of patients involved in a clinical trial, and reflect practices in Canada and the US in the 1990s. She points out that Canada has since intensified its use of these procedures. In the course of her current research, she hopes to discover whether the changes in the Canadian healthcare system have closed the gap.

Dr. Kaul also investigates variations in cardiac treatments for the elderly, to see whether they are associated with differences in US and Canadian mortality rates. Given the entry of the baby-boomer generation into old age and the extremely limited number of clinical trials performed on elderly populations, this type of information is increasingly important to policy-makers. For her study Dr. Kaul will use Medicare data from the US and data gathered by Alberta Health and Wellness in Canada; she expects to have preliminary results in the next year.

IS THERE A LINK BETWEEN REVASCULARIZATION RATES AND MORTALITY RATES?

If the study shows that mortality rates are lower in the US, possibly as a result of higher rates of revascularization, Dr. Kaul suggests we may have to consider a greater allocation of health resources to this area. On the other hand, if no differences are found, it could indicate that healthcare dollars are used efficiently in Alberta. "At a healthcare-system level, my research will hopefully help with decisions regarding the allocation of resources to cardiovascular care, and provide information on how they impact the health of patients suffering from this heart disease," she explains.

Dr. Kaul came to this area of research through what she describes as a "convoluted evolution". With degrees in business, public policy, and epidemiology, she feels her current work combines all the skills she gathered through her diverse training. And what motivates her as she sifts through reams and reams of data? "The public and policy-makers are interested in getting the best care, and the most cost-effective care. Is that being done? That's what I'm trying to answer."

DR. KAUL ALSO INVESTIGATES CARDIAC TREATMENTS FOR THE ELDERLY

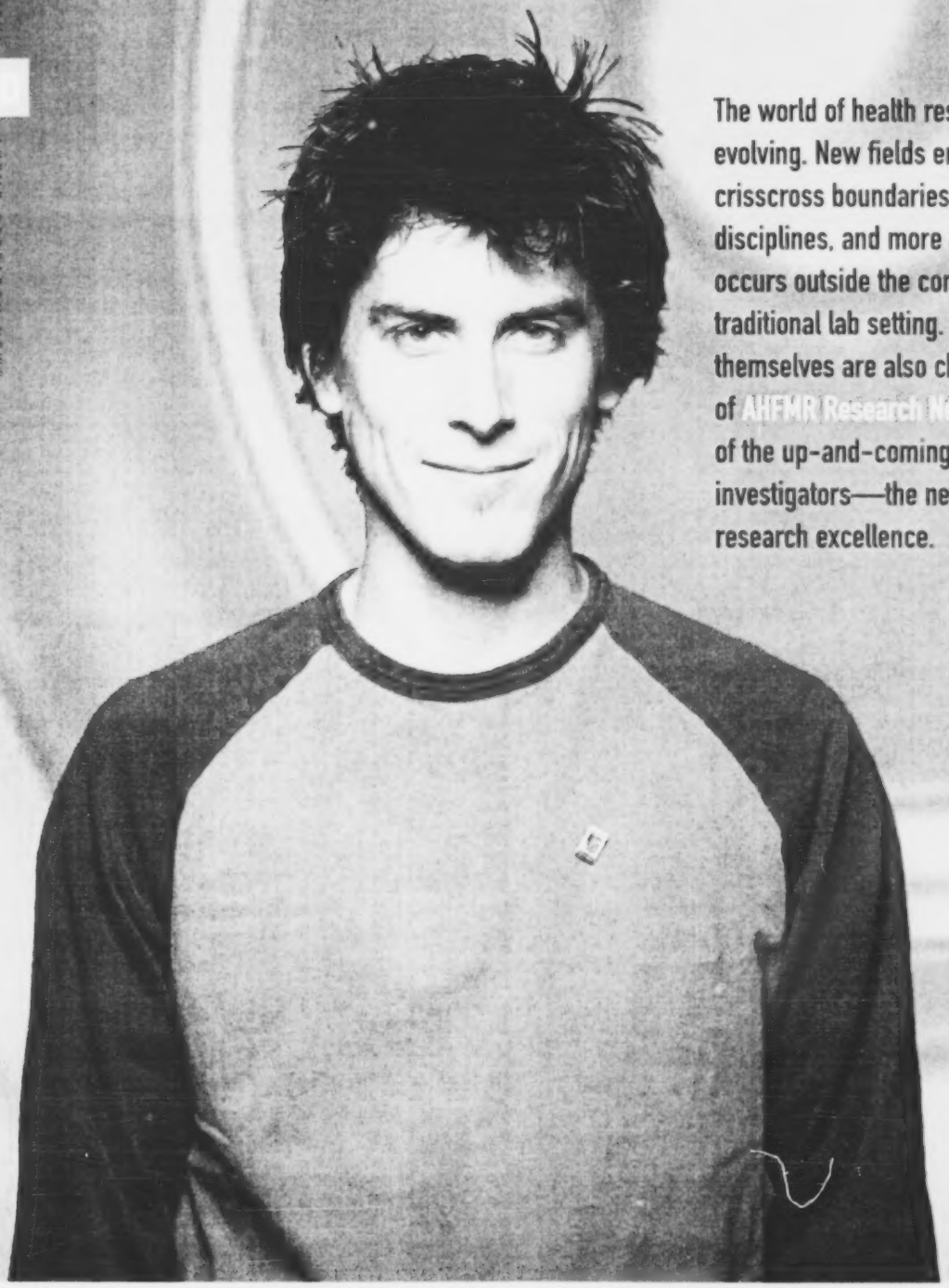
Heritage Population Health Investigator Dr. Padma Kaul is an assistant professor in the Division of Cardiology, part of the Department of Medicine at the University of Alberta. In addition to support from AHFMR, she receives funding from the Canadian Institutes of Health Research (CIHR).

Selected publication

Kaul P, Chang W-C, Lincoff AM, Aylward P, Betriu A, Bode C, Califf RM, Ohman EM, Guetta V, Steg PG, Van de Werf F, Armstrong PW. Optimizing use of revascularization and clinical outcomes in ST-elevation myocardial infarction: insights from the GUSTO-V trial. *European Heart Journal* 2006 May;27(10):1198-1206.

ABOVE: DR. PADMA KAUL

New faces of rese



The world of health research is constantly evolving. New fields emerge, scientists crisscross boundaries to work in different disciplines, and more and more research occurs outside the confines of the traditional lab setting. The researchers themselves are also changing. This issue of AHFMR Research News profiles some of the up-and-coming young Heritage investigators—the next generation of research excellence.

LEFT: WILL SHEAD

arch

People take all sorts of paths to arrive at research careers. Some know very early on that research is what they want to do. For others, an inspiring professor from their undergraduate years makes the difference. For Michelle Zec, it was a broken arm.

SHE WAS IN HER THIRD YEAR OF ZOOLOGY at the University of Calgary, when a broken arm from a snowboarding accident brought her to the university's Sport Medicine Clinic for physiotherapy. The experience prompted her to volunteer at the clinic, which in turn piqued her interest in musculoskeletal injuries—particularly those of the knee. She embarked on an undergraduate research project on knee ligaments, which was co-supervised by zoology professor Dr. Anthony Russell and surgery professor Dr. Cy Frank. That research experience motivated her to pursue both research and medicine further. Zec is now enrolled in the University of Calgary's M.D.-Ph.D. program, supported by an AHFMR studentship.

"Early on, research was not in my sights at all," she says. "I think most undergraduates have a misconception about research. It's much more interesting than they think. But you have to be exposed to it. I was very fortunate to have had that initial opportunity."

Michelle Zec defended her Ph.D. thesis in April 2006 and will finish medical school in 2008. Her Ph.D. research in biomedical engineering involved a biomechanical study of ligament tissue. She was co-supervised by Dr. Frank, who is a Heritage Scientist, and engineering professor Dr. Nigel Shrive."Every step we take loads and unloads our joints," she explains. "I want to know how ligament tissue in the knee responds to repetitive loading, especially in the case of an injured joint.

"The goal is to understand which factors might compromise ligament healing following injury. When these are known, it may be possible to optimize healing. For example, I found that swelling significantly alters how ligaments respond to loading. Since swelling is common after injury, understanding the role this factor plays in tissue mechanics becomes important."

Page 12 ▸

LEFT: MICHELLE ZEC

From animal health to human health

For her Ph.D. research at the University of Saskatchewan, Heritage Fellow Dr. Julia Ewaschuk studied metabolic acidosis, a condition of neonatal diarrhea in cattle and a major source of economic loss to livestock enterprises in Canada. Her work led to a new understanding of this disease and the potential to treat it with probiotics—microorganisms that benefit the health of their hosts. Now at the University of Alberta, Dr. Ewaschuk still studies probiotics, but for human health.

She has joined the laboratory of Heritage Senior Scholar Dr. Karen Madsen, who studies the relationship between the human intestine and the bacteria that live in it. These bacteria are vital to our health because they aid in proper digestion and support immune-system function.

Dr. Ewaschuk looks at one aspect of this relationship: the signals that pass back and forth between the bacteria and the epithelial cells that line the intestine. "A dynamic cross talk goes on continuously," she explains. "Intestinal epithelial cells can recognize the difference between good and bad bacteria. We're not entirely sure how this happens, but part of it occurs via a receptor that recognizes bacterial DNA. I hope to understand the mechanics of this interaction."

The work is done in the context of inflammatory bowel disease (IBD), which involves an aggressive immune reaction against the bacteria in the intestines. The condition, which includes ulcerative colitis and Crohn's disease, strikes one in 350 Canadians. "Studies show that feeding probiotics to people with IBD has benefits. By understanding how bacteria interact with the intestine, we may be able to exploit this and use it to help people with IBD."

Dr. Julia Ewaschuk is an AHFMR Fellow in the Division of Gastroenterology, part of the Department of Medicine at the University of Alberta. She also holds a Canadian Association of Gastroenterology Fellowship.

Selected publications

Ewaschuk JB, Walker JW, Diaz H, Madsen KL. Bioproduction of conjugated linoleic acid by probiotic bacteria occurs in vitro and in vivo in mice. *Journal of Nutrition* 2006;136(6):1483-1487.

ABOVE: DR. JULIA EWASCHUK

Although currently immersed in medical-school studies, Zec plans to continue with research as a clinician-scientist, perhaps as an orthopedic surgeon. "I want to learn more about the research methods of evidence-based surgery. Joint injuries dramatically change people's lives. Measuring the impact of both the injury and the treatment is an important means of optimizing patient care. If I could contribute to improved patient outcomes, that would be the ultimate research reward."

Focus on the brain

HERITAGE FELLOW DR. NIKOLAI MALYKHIN always wanted to be a brain researcher. But he was born in the wrong part of the world. A native of Belarus, he did both a medical degree and a Ph.D. in clinical psychopharmacology. "But what I really wanted to do was brain research," he says. "It was not possible to pursue this in Belarus, mainly because of the lack of the latest MRI equipment which allows researchers to apply advanced MRI techniques."

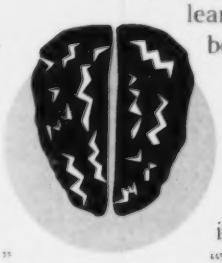
MRI (magnetic resonance imaging) is a non-invasive imaging technique that uses magnetic fields. It has become an important tool for studying the structure of the brain. Fortunately for Dr. Malykhin, he was awarded an AHFMR Health Research Fellowship at one of the best places in the world for magnetic resonance imaging of the brain—the University of Alberta In Vivo NMR Centre. "This is an incredible opportunity for me, not only because I get to do brain research but because I have access to absolutely state-of-the-art equipment. We're opening new windows to the brain."

Dr. Malykhin is now a full-time researcher working with Heritage Scholar Dr. Nick Coupland, director of the Psychopharmacology Research Unit at the University of Alberta. Dr. Malykhin leads a number of projects, all of which involve the very latest MRI techniques. One of them is MRI spectroscopy, a non-invasive means of measuring chemicals in the brain. Dr. Malykhin uses MRI spectroscopy to study how brain chemicals change in post-traumatic stress

TOP RIGHT: DR. NIKOLAI MALYKHIN
BOTTOM RIGHT: DR. HUGO LEHMANN

"We're opening new windows to the brain"

disorder and major depression. His particular interest is the role of the stress hormone cortisol. "During periods of stress, people have very high levels of cortisol," explains Dr. Malykhin. "If cortisol levels remain high over a period of time, cells in certain areas of the brain will start to die. We are trying to determine the mechanism." His team examines evidence that cortisol affects the level of the neurotransmitter glutamate.



"MRI spectroscopy is our way of finding out what is going on in the brain. It's very exciting to be able to do this work. Uncovering the mechanism of damage opens up the possibility of repair."

Brain research is also the focus of Heritage Fellow Dr. Hugo Lehmann, but it wasn't always his passion. He was going to be a marine biologist. Then, a college course in psychology in Dr. Lehmann's home province of Quebec got him hooked on child development and learning. Biology and psychology remained two competing interests until an undergraduate course in the neurobiology of learning and memory tied them together.

"Research has opened up the possibility of recovering brain function"

Neurobiology is the study of cells of the nervous system and how they are organized to process information and mediate behaviour. Dr. Lehmann looks at neurons (the cells in the brain) to understand what they do in terms of learning and memory. He now does post-doctoral research with Heritage Scientist Dr. Robert Sutherland at the Canadian Centre for Behavioural Neuroscience of the University of Lethbridge. Dr. Lehmann focuses on understanding the exact functions of the medial temporal lobe area of the brain, including the hippocampus and the amygdala, which play a role in learning and memory. Research in this area has been galvanized by the recent discovery that the hippocampus is one of only two areas in the adult brain that can make new neurons, a process called *neurogenesis*. It was once thought that the adult brain could not make new neurons, and that it was, therefore, impossible to repair a damaged brain.

"While we know neurogenesis is happening, we don't know much at all about what it is doing," explains Dr. Lehmann. "Is it contributing to cogni-

Page 14 ▸

tive function such as learning and memory? It's one thing to make new neurons. The important thing for me is to find out what effect these new neurons have on behaviour.

"This is an exciting time for the neurobiology of learning and memory combined with neurogenesis. It's clinically relevant because research has opened up the possibility of recovering brain function, which could offer hope to individuals suffering from brain injury and from brain disorders such as Parkinson's and Alzheimer's disease.

"We're far from there yet, because we don't understand what is going on. But if we did, perhaps we could stimulate specific areas of the brain to repair themselves by replacing cells."

A great teacher inspired Preston Williams to do graduate work. Williams did his undergraduate degree in North Bay, Ontario, at Nipissing University, one of Canada's smallest universities. There he met Dr. Matti Saari, who teaches psychology and runs a neuroscience research lab. "Matti offers undergrads an incredible research experience. He believes undergraduates are capable of doing graduate-level research if given the chance. As a student, you are involved with experiments from start to finish."

Williams completed a master's degree and is now working on a Ph.D. at the University of Lethbridge, in the Canadian Centre for Behavioural Neuroscience. He is supervised by another inspiring research mentor: Dr. Bryan Kolb, a founding father of behavioural neuroscience in Canada. Williams aims to understand the neurophysiology of stroke and its long-lasting effects. He studies rat models of stroke; in particular, stroke that occurs outside the brain's primary motor cortex—the origin of one of the major pathways controlling movement. Surprisingly, the rats exhibit motor impairments even though the brain tissue in this region is intact. "I'm interested in finding out why," says Williams.

The first step in the research was creating an index of these impairments. Now he is getting set to test two rehabilitation strategies to see how they compare. One is a behavioural approach that involves teaching a skilled motor task. It uses practice and repetition to help build new networks in the brain. The other is a pharmacological approach that uses a drug to stimulate the production of new connections. Nicotine is one such drug, and the Kolb lab has shown that nicotine stimulates growth of new connections between neurons that aid in recovery after brain injury. "What we're looking at is plasticity," explains Williams, "the ability of the brain to make new connections. We believe it is key to better recovery and improvement after stroke.

"Brain injury is devastating. The things we take for granted—the activities of daily living—are changed forever. My hope is that one day this research will be used to design treatment programs that will help people with brain injuries."

"We're looking at the ability of the brain to make new connections"

LEFT: PRESTON WILLIAMS

Understanding gambling

GAMBLING WAS NOT WILL SHEAD'S MAIN INTEREST IN PSYCHOLOGY, but that all changed when he started graduate work with Dr. David Hodgins, a professor of clinical psychology at the University of Calgary. Dr. Hodgins has been involved in research

Page 16 ▸

Beyond cool tools

A love of working with his hands combined with an interest in medicine led Heritage Health Research Clinical Fellow Dr. Steven Heitman to gastroenterology—the field of medicine that deals with the diagnosis and treatment of problems of the digestive system. "Gastroenterology is an exciting, procedure-oriented field," he explains. "We have an incredible set of tools to care for patients, and the technology behind these tools is expanding rapidly. I'm particularly keen on learning and studying the advanced procedures."

"Gastroenterology is an exciting, procedure-oriented field"

But it's more than just "cool tools" for Dr. Heitman. His clinical interest in advanced endoscopy has sparked a research interest in technology assessment and health economics in gastroenterology. For his fellowship at the University of Calgary (supervised by Dr. Braden Manns and Heritage researcher Dr. Robert Hilsden) he is leading a clinical trial to evaluate the cost-effectiveness of a new technology called capsule endoscopy. The procedure involves having a patient swallow a jelly-bean-sized camera that takes two pictures per second while it travels through the gastrointestinal system. The camera takes about 50,000 images in total, which are then transmitted to a sensor array on the patient's abdomen and downloaded to a computer for analysis.

One of the main reasons for the excitement around capsule endoscopy is its ability to image the small bowel. This very long and twisty structure is located between the stomach and the large bowel, which makes it hard to reach with instruments passed in through either the mouth or the anus. "Identifying and treating the source of gastrointestinal bleeding originating in the small bowel is one of the major challenges facing gastroenterologists," notes Dr. Heitman. "It's a blind spot, and capsule endoscopy appears to be better than X-ray studies for visualizing the small bowel. However, it is also very costly—the capsules cost about $1000 and can only be used once."

Dr. Heitman's clinical trial is a randomized study of capsule endoscopy compared to the current standard of care for people with bleeding of obscure origin. "This is an economic evaluation—we will be looking at both cost and effectiveness," he says.

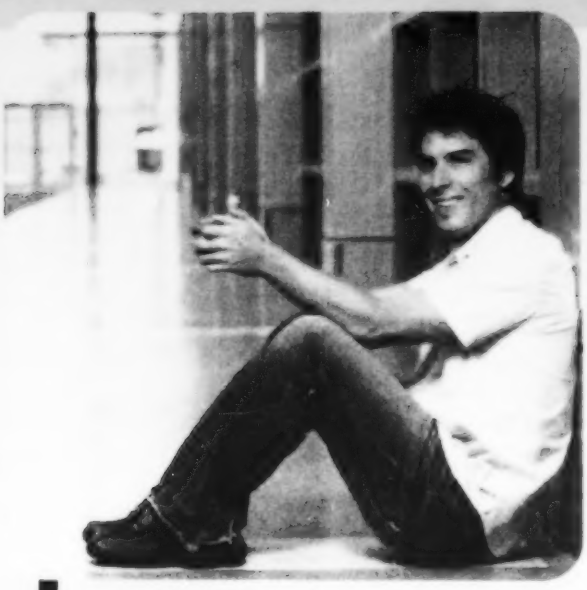
"It's not all about saving money. It is about choosing treatments that offer the most benefit to the most patients at an acceptable cost to society. We don't have unlimited healthcare resources. One of the challenges for health policy decision-makers is to sort through the many available technologies and choose those that are most cost-effective for treating patients. Economic evaluation is designed to help decision-makers make rational decisions."

Dr. Steven Heitman is an AHFMR Health Research Clinical Fellow in the Faculty of Medicine at the University of Calgary. He also holds a Clinical Fellowship Award from the Canadian Association of Gastroenterology, co-sponsored by the Canadian Institutes of Health Research and Janssen-Ortho Inc. His research is also supported by the Calgary Health Region and the Noel Hershfield Fund for Training in Advanced Gastroenterology.

Selected publication

Heitman SJ, Manns BJ, Hilsden RJ, Fong A, Dean S, Romagnuolo J. Cost-effectiveness of computerized tomographic colonography versus colonoscopy for colorectal cancer screening. *Canadian Medical Association Journal* 2005 Oct 11;173(8):877-881.

ABOVE: DR. STEVEN HEITMAN



"Gambling is quite different from other addictions"

on problem gambling for nearly a decade. Shead is now doing his Ph.D., supported by an AHMR studentship. "Gambling intrigues me. It's quite different from other addictions, such as alcohol or drugs. We know there are addictive properties in the substances that people are putting into their bodies. But gambling isn't like that, and yet people still become addicted."

Shead studies the role that expectancy plays in gambling. His first step is a questionnaire to screen people with gambling experience, in order to identify those who fall into one of two gambling subtypes: reward-expectancy gamblers and relief-expectancy gamblers.

It may be that reward-expectancy gamblers associate positive emotion and gambling. When they're in a good mood, they are more inclined to gamble. Similarly, it may be that relief-expectancy gamblers associate gambling with a reduction of tension or the alleviation of negative emotions. When they are feeling down, they are more likely to gamble—even though gambling does not necessarily elevate their mood.

Once the screening process is complete, Shead will try to determine whether reward-expectancy gamblers differ from relief-expectancy gamblers in the degree to which gambling concepts come to mind or are activated in memory, and whether gambling behaviour is actually precipitated by expectancies.

"Once you know the type of gambler, it might be possible to tailor treatment to their type of expectancy," says Shead. "For example, a reward-expectancy gambler might benefit more from learning how to manage high levels of positive affect than learning how to deal with negative emotions. But we're not at this point yet. The use of the questionnaire to determine these subtypes is in its infancy. We have to do the research first."

Asking the right questions

HERITAGE CLINICAL FELLOW DR. CHLOE JOYNT was the kind of child who was always asking questions. "I think I really annoyed my family," she says. Now a physician and a resident in neonatology, she hasn't lost her passion for questions—if anything, it's stronger than ever. "When you're working as a doctor, all sorts of clinical questions come to mind. Doing this fellowship, I have the perfect opportunity to learn how to ask questions properly, so I get useful answers that can be applied to patients."

ABOVE: WILL SHEAD
RIGHT: DR. CHLOE JOYNT

"The effects of asphyxia are widespread"

Dr. Joynt is working toward a master's degree with supervisor and Heritage Clinical Investigator Dr. Po-Yin Cheung. Dr. Joynt's research focuses on the resuscitation and consequent medical management of babies who suffer from asphyxia. This condition is caused by the inadequate intake of oxygen, and it accounts for many birth complications.

"The effects of asphyxia are widespread," explains Dr. Joynt. "After asphyxia, the heart undergoes what we call stunning—it doesn't work very well. These babies have low blood pressure and low blood flow, which can damage many internal organs. This can lead to serious health conditions or even death. It isn't enough just to get the oxygen back. The body has undergone quite a shock and needs to get going again. That's why drugs are given to help the heart out after asphyxia."

Internationally, practices vary greatly as to what drug gets used and when. To figure out which ones are best for asphyxia, Dr. Joynt tests all the medications head-to-head. "They all seem to do different things to different parts of the body," she says. "My aim is to compile the information to determine which one would help the babies the most overall.

"I've presented preliminary findings at a few conferences. People from all over the world come up to me and want to chat about what they do. In the future, I hope to set up a number of collaborations to do even more work in this area."

Michelle Zec is enrolled in the M.D.-Ph.D. program at the University of Calgary, as well as the Alberta Provincial CIHR Training Program in Bone and Joint Health. She completed her Ph.D. in biomedical engineering at the University of Calgary Schulich School of Engineering.

Dr. Nikolai Malykhin is an AHFMR Health Research Fellow in the Department of Psychiatry at the University of Alberta. He also holds a Wyeth-Ayerst Canadian Institutes of Health Research R&D Fellowship Award.

Dr. Hugo Lehmann is an AHFMR Fellow in the Canadian Centre for Behavioural Neuroscience at the University of Lethbridge. He also holds a Heart and Stroke Foundation of Canada Research Fellowship Award.

Preston Williams is a Ph.D. student at the Canadian Centre for Behavioural Neuroscience at the University of Lethbridge. He is supported by an AHFMR Studentship.

Will Shead is a Ph.D. student in the Department of Clinical Psychology at the University of Calgary. He is supported by an AHFMR Studentship and also receives funding from SSHRC (the Social Sciences and Humanities Research Council of Canada), the Alberta Gaming Research Institute, the University of Calgary, and the Peguis School Board (Manitoba).

Dr. Chloë Joynt is an AHFMR Clinical Fellow and a Clinician Investigator trainee of the Royal College of Physicians and Surgeons of Canada, working in the Division of Newborn Medicine, part of the Department of Pediatrics at the University of Alberta. She also receives funding from the Stollery Children's Hospital Foundation.

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Adeeb SM, Zec ML, Thornton GM, Frank CB, Shrive NG. A novel application of the principles of linear elastic fracture mechanics (LEFM) to the fatigue behaviour of tendon tissue. *Journal of Biomechanical Engineering* 2004 Oct;126(5):641-650.

Choi C, Coupland NJ, Bhardwaj PP, Malykhin N, Gheorghiu D, Allen PS. Measurement of brain glutamate and glutamine by spectrally-selective refocusing at 3 Tesla. *Magnetic Resonance in Medicine* 2006 May;55(5):997-1005.

Lehmann H, Lecluse V, Houle A, Mumby DG. Retrograde amnesia following hippocampal lesions in the shock-probe conditioning test. *Hippocampus* 2006 Apr;16(4):379-387.

Williams PTJ, Gharbawie OA, Kolb B, Kleim JA. Experience-dependent amelioration of motor impairments in adulthood following neonatal medial frontal cortex injury in rats is accompanied by motor map expansion. *Neuroscience* 2006 Sep 1;141(3):1315-1326.

Shead NW, Dobson KS. Psychology for sale: the ethics of advertising professional services. *Canadian Psychology* 2004 May;45(2):125-136.

Biotech in the next

Dr. Bhavin Rawal has quite a story. Armed with a Ph.D. in microbiology from his native India and post-doctoral training in Germany, he immigrated to Canada in 1997. His field was the environment sector and he soon got a job as a manager of reclamation projects in Ontario. But in 2002, the Ontario government made an engineering degree and P.Eng. designation mandatory for reclamation and remediation managers. The new regulation put Dr. Rawal out of a job, and the firm he worked for went bankrupt.

"I was unemployed for six months, and it was proving very difficult to get back into the environmental field," says Dr. Rawal. "I began to explore alternatives, and a friend suggested the Master of Biomedical Technology (M.B.T.) program at the University of Calgary. I took the leap, and that's how I ended up in biotechnology."

While in the M.B.T. program, Dr. Rawal was mentored by Ken Boutilier, president of the Calgary-based biotech company MBEC BioProducts Inc. When he graduated in 2005, Dr. Rawal went to work at MBEC (now known as Innovotech Inc.). He then applied for an AHFMR ForeFront Internship.

This program provides opportunities for university graduates to develop careers in Alberta's biotechnology and health industries. Interns learn the business aspects of the health industry through a combination of training courses and business experience. The program aims to keep scientists interested in the biotech and health fields in Alberta, rather than training them in Alberta only to have them move elsewhere to find employment in the industry.

Working as a ForeFront Intern, Dr. Rawal is well on his way to carving out a successful career in Alberta. Together with other Innovotech senior scientists, he has developed a test kit (bioFILM PA) that quickly identifies the right combination of antibiotics to kill biofilms formed by *Pseudomonas* bacteria. It will allow improved, customized care for patients with cystic fibrosis and those who are immunocompromised. The test kit has received Health Canada approval. The company's next step is to gain approvals in the United States and the European Union, an effort to be spearheaded by Dr. Rawal.

Dr. Rawal was one of three people from the M.B.T. class of 2005 who went on to become AHFMR ForeFront Interns. The other two were Sarah Keen and Tony Abboud.

Sarah Keen entered the M.B.T program because she was interested in moving into the business side of biotechnology. She had been working in a variety of university research labs after graduating from the University of Alberta with a degree in biochemistry. "The M.B.T program allowed me to gain a different perspective on biotechnology without negating my science background," she explains.

Interns learn the business aspects of the health industry

Following her M.B.T. studies with a ForeFront Internship, she completed her first year at the technology-transfer organization TEC Edmonton, a joint venture of Economic

RIGHT: DR. BHAVIN RAWAL

Alberta generation

Development Edmonton and the University of Alberta. Recently she began a new internship at CV Technologies Inc., manufacturer of COLD-fX, the popular cold- and flu-preventive medication. She works in the areas of intellectual property management and scientific affairs.

"After completing the M.B.T program and practicum, the ForeFront Internship has provided me with further exposure and work experience in technology commercialization," she says. "There is a synergy between the M.B.T. program and the ForeFront Internship. Hands-on training through support from the ForeFront program is ideal, and has definitely added value to my career development."

"There is a synergy between the M.B.T. program and the ForeFront Internship"

Unlike Dr.Bhavin Rawal and Sarah Keen, Tony Abboud went directly into the M.B.T. program after finishing his undergraduate degree in cellular, molecular, and microbial biology at the University of Calgary. He did his M.B.T. internship at Calgary-based SemBioSys Genetics Inc., a biotechnology company that develops a line of pharmaceutical and non-pharmaceutical products based on its plant-based oilbody-oleosin technology platform. He stayed on with the company as a ForeFront Intern.

His main role at SemBioSys is identifying new products to complement the company's current pharmaceutical line. Recently, inspired by an AHFMR-sponsored seminar he attended, he started a competitive intelligence unit. Competitive intelligence is a systematic process for gathering and analyzing information about general business trends and competitors' activities.

"I put forward a proposal to management, and it was accepted," he says. "I have begun to implement a gated approach to competitive intelligence. I'll do a twice-quarterly update to management on news and relevant issues in biotech. In addition, I'm starting a database to track competitive intelligence; anyone in the company can contribute to it."

Long-term goals include gaining some international experience. "Biotechnology is definitely where I want to be. My end goal remains the same: to be the CEO of a biotech company. The difference is that I've become much smarter at how to go about doing that. Both the M.B.T. program and the ForeFront Internship have expanded my skill set and have been key stepping stones to help me reach my goal."

ABOVE: SARAH KEEN AND TONY ABBOUD

A winning combination

Since 1996, AHFMR has supported 42 ForeFront interns. Of this group, 11 hold M.B.A. degrees from the University of Alberta and 6 have M.B.T.s from the University of Calgary. Both of these degree programs offer students a broad range of tools to help them understand and address the needs of industry. The AHFMR ForeFront Internship program provides hands-on experience and mentorship to help interns develop important skills and knowledge of the business of commercialization. This combination of education and work experience prepares the individual for entry into the exciting world of innovation in the life sciences. Recognizing the natural fit between the ForeFront Internship and these programs, AHFMR is developing new awards to support students who pursue these degrees. The studentship awards represent yet another component of AHFMR's commitment to fostering future leaders in the life-sciences industry.

A road less travelled

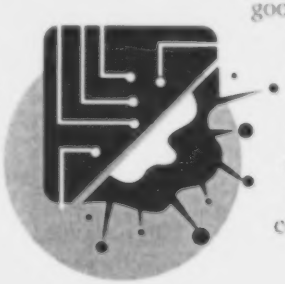
Jeeshan Chowdhury is going places—in every sense. As a recipient of the prestigious Rhodes Scholarship, the AHFMR M.D.-Ph.D. Student recently moved to Oxford University for two to three years of studies which will take him even farther across the globe. He will conduct half of his research in West Africa, specifically in Gambia, a small country where hepatitis is rampant and liver cancer is a significant cause of mortality. His field, *pharmacogenetics*, looks at how genetic factors affect people's individual responses to drugs. Chowdhury plans to study the pharmacogenetics of specific liver cancers.

Chowdhury's Rhodes studies mark a bit of a departure from his research at the University of Alberta, research he will continue after completing his time at Oxford. In Edmonton he works in the lab of electrical engineer Dr. Chris Backhouse and cancer researcher Dr. Linda Pilarski. "When I was in medical school, I looked for a lab doing research targeted toward translating the results into actual patient benefits at the bedside. I really enjoy the interdisciplinary approach—the interaction between the different disciplines, and how they come together and use their strengths to accomplish something."

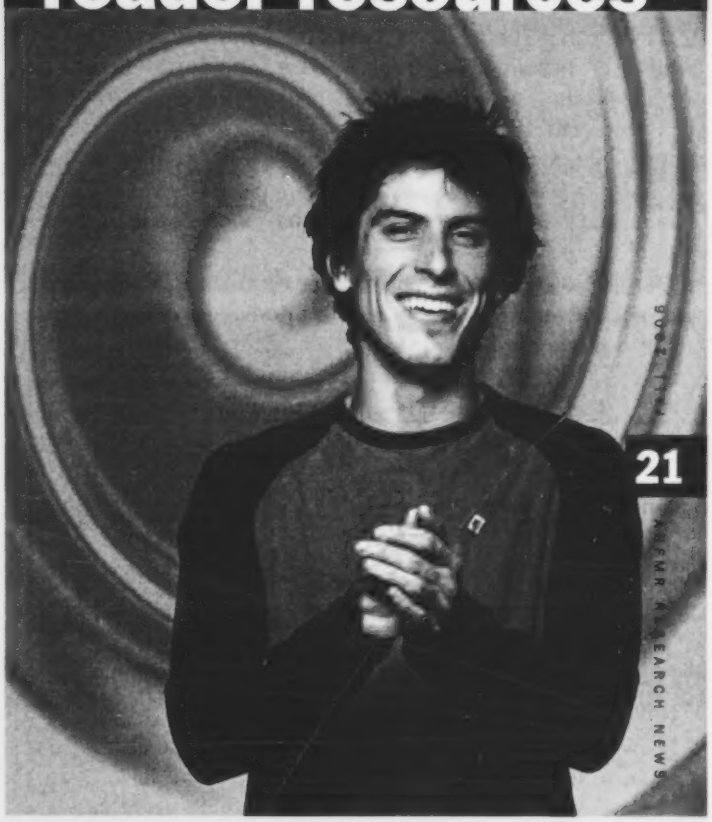
Chowdhury found that interface in the Backhouse-Pilarski lab, known as the Alberta Cancer Diagnostic Consortium (ACDC). Here engineers, biologists, and clinicians combine their expertise in nanofabrication, microfluidics, oncology, and molecular biology to create hand-held devices for genetic testing. "We're taking cutting-edge molecular biology that's only done in the research lab and trying to turn its power to patients. For medicine to progress, we need to equip physicians with those tools so they can look beyond the physical to the molecular," Chowdhury explains. Although scientists can already identify the genetic markers that determine why some people respond poorly to chemotherapy, the costs of testing every patient genetically would be massive. ACDC aims to create a cost-effective hand-held system so that, eventually, physicians at the bedside can do the genetic tests that now take up a whole floor at the Cross Cancer Institute.

"We need to equip physicians with those tools"

What with his research interests and the academic burdens of medical school, it might seem that Chowdhury would find little time for anything else. Not so. He recently trained for a marathon, and he was also a member of both the University of Alberta and Edmonton rowing clubs. In fact, he says, the early-morning training sessions required for rowing were good preparation for the rigours of medical school. "Rowing is a fabulous workout—and being part of a team and the coordination and



ABOVE: JEESHAN CHOWDHURY



discipline you develop are great," he says, adding that he hopes to continue pursuing this passion while at Oxford, an institution renowned for its rowing tradition. Chowdhury's athletic background served him well in securing a Rhodes Scholarship: participation in sports is one of its requirements, along with academic excellence and leadership qualities.

"It was an honour just to be nominated," he says of the intense selection process and two rounds of interviews he underwent at the hands of former Rhodes Scholars. Interviewers questioned him about everything from his thoughts on the NASA space program to his views on the use of performance-enhancing drugs in sport. But the most interesting question came when he was asked to identify the symbol that best represents Canada for him.

His answer? The sculpture which appears on Canada's $20 bill. The Spirit of Haida Gwaii—by renowned Haida artist Bill Reid—depicts a variety of creatures in a very crowded canoe. "Some of them are getting along, some of them aren't, but they all stay together and chart a course," says Chowdhury. "It really symbolizes Canada's diversity for me, as a first-generation Canadian."

Jeeshan Chowdhury is an AHFMR M.D.-Ph.D. student and a Rhodes Scholar.

The Rhodes Scholarship

The Rhodes Scholarships were initiated in 1902 by Cecil John Rhodes, founder of Rhodesia, the African country now known as Zimbabwe. The scholarships, awarded for academic qualities and strength of character, provide successful candidates with two years of study at the University of Oxford, sometimes extended to a third year.

Applicants are judged according to the following criteria:

- literary and scholastic attainments;
- energy to use one's talents to the full, as exemplified by fondness for and success in sports;
- truth, courage, devotion to duty, sympathy for and protection of the weak, kindliness, unselfishness, and fellowship;
- moral force of character, and instincts to lead and to take an interest in one's fellow beings.

Famous Rhodes Scholars include former Canadian prime minister John Turner; former US president Bill Clinton; Newfoundland premier Danny Williams; and medical researcher and University of Toronto president Dr. David Naylor.

Research views

The Banff Centre Science Communications program
http://www.banffcentre.ca/programs/program.aspx?id=527

Discovery Channel
http://www.discoverychannel.ca

Reading the genetic roadmap

Dr. Edan Foley's web site
http://www.ualberta.ca/~efoley/Home.html

Sports injuries and kids

University of Calgary Sport Medicine Centre
http://www.sportmed.ucalgary.ca

From the heart: cardiac care

Theheart.org
http://www.theheart.org

New faces of research

University of Calgary Addictive Behaviours Laboratory
http://www.fp.ucalgary.ca/addictivebehlab/

Alberta Provincial CIHR Training Program in Bone and Joint Health
http://www.boneandjoint-training.ca/

Alberta Gaming Research Institute
http://www.abgaminginstitute.ualberta.ca/

Researchers in the making

The Rhodes Trust
http://www.rhodesscholar.org

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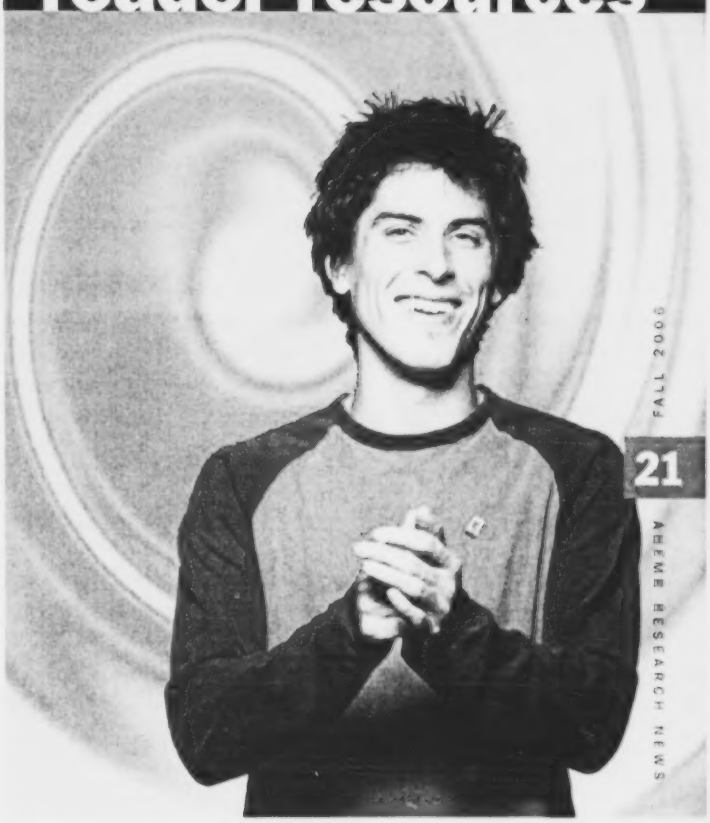
reader resources



Research views

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Discovery Channel
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Reading the genetic roadmap

Dr. Edan Foley's web site
http://www.ualberta.ca/~efoley/Home.html

Sports injuries and kids

University of Calgary Sport Medicine Centre
http://www.sportmed.ucalgary.ca

From the heart: cardiac care

Theheart.org
http://www.theheart.org

New faces of research

University of Calgary Addictive Behaviours Laboratory
http://www.fp.ucalgary.ca/addictivebehlab/

Alberta Provincial CIHR Training Program in Bone and Joint Health
http://www.boneandjoint-training.ca/

Alberta Gaming Research Institute
http://www.abgaminginstitute.ualberta.ca/

Researchers in the making

The Rhodes Trust
http://www.rhodesscholar.org

2006 AHFMR Media Fellows

Every summer, AHFMR selects one student from the University of Alberta and one from the University of Calgary and gives them the opportunity of working with an Alberta media outlet. The AHFMR Media Fellowship program allows participants to spend 12 weeks working on science stories as reporters, researchers, or production assistants. In the personal accounts below, the 2006 Media Fellows describe their experiences at CBC radio this past summer.

Piotr Kiakowicz, medical student, University of Alberta (below)

Coming from academia, I had much to learn from working as a CBC Radio reporter. Early on, I learned that radio is perhaps the most intimate and engaging of the media forms. But most importantly, the experience taught me to keep information simple and on a personally meaningful level.

This summer, local affairs ranged from sport championships to military conflicts. My focus was on health and science in the community, on issues such as the boom in health-care construction. But I also covered a number of other diverse topics, from festivals to sex for seniors.

Working in radio introduced me to challenges that will likely help me become a better physician: how to ask the right questions, and how to communicate technical information in a personally engaging way.

Chris Willie, health sciences student, University of Calgary (above right)

Working at the CBC as an AHFMR media fellow was both rewarding and extremely challenging. In academia I have learned to work and communicate in a certain way, but this position stretched me in directions I didn't know existed. Translating science for the public was more difficult than I had anticipated. Scientific and medical topics tend to be quite esoteric, and finding methods to disseminate information in a clear and concise manner, so that the general public understands it and finds it interesting, can be a daunting task. However, by the end of the CBC experience, I felt well equipped to make science a matter that listeners could relate to their own lives and, consequently, care about.

During the final year of my undergraduate degree, I will be working on my honours thesis with Dr. Marc Poulin. I spent the summer learning to convey other people's research to the public. Now I am looking forward to putting these skills to use when communicating my own research to those around me. No matter what I do in the future, I know that the AHFMR media fellowship has provided me with an invaluable experience.

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If you are not already on our mailing list for our quarterly AHFMR Research News, and would like to receive it, please phone, fax, e-mail or write us and ask to be added to our subscribers list. It's free!

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